IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Applicant	:	Andersen et al.		
Serial No.	:	10/528,926	Art Unit:	1794
Filed	:	December 16, 2005	Examiner:	Nikki H. Dees
For	:	Chewing Gum Comprising at least two Different Biodegradable Polymers		

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Appeal Brief is in support of Applicant's Notice of Appeal filed on May 17, 2010.

APPEAL BRIEF

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I. Real Party in Interest

The real party in interest for the present application is Gumlink A/S, which is the assignee. Gumlink A/S is the assignee of record per an assignment recorded, on December 15, 2005, by inventors Lone Andersen and Helle Wittorff.

II. Related Appeals and Interferences

To the best of the Applicant's knowledge, there are no appeals or interferences which are directly related to the present appeal.

III. Status of Claims

Claims 1-67 were originally filed in the present application and have been amended a number of times in response to objections as set forth in paper no. 20080220, paper no. 20081205, paper no. 20090721 and paper no. 20100217. Claims 3, 7, 9, 14, and 67 have been cancelled. Present claims 1-2, 4-6, 8, 10-13, and 15-66 are the subject of the present appeal and is set forth in the Appendix (section VIII) to this appeal brief.

IV. Status of Amendments

There have been no amendments to the claims or specification filed after the final rejection.

V. Summary of the Claimed Subject Matter

The present technology is directed to a chewing gum comprising at least two different biodegradable polymers.

It is an object of the invention to provide a chewing gum having certain desired texture without dissolving the overall chewing gum structure when adjusting the texture, and it is a further object of the invention to obtain a completely biodegradable chewing gum having a texture comparable to conventional chewing gum.

According to the present invention, these objects have been reached according to the provisions set forth in present claim 1. The at least two different biodegradable polymers have a different glass transition temperature Tg, at least one polymer having a glass transition of at least +1°C, and at least one polymer having a glass transition temperature of less than 0 °C. There is a difference in molecular weight between the at least two different biodegradable polymers of at least 1000 g/mol Mn.

According to the invention, a chewing gum comprising at least two different biodegradable polymers exhibits an improved texture prior to any adding of for example softeners. It has been realized that the desired chewing gum texture properties, contrary to every expectation and any prior art disclosures, may actually be obtained when combining biodegradable chewing gum polymers, for example in the gum base or in the final gum. (Application, page 3, lines 14-19)

The fact, that biodegradable polymers may actually be configured into a suitable polymer gum base, e.g. at least one biodegradable elastomer and at least one biodegradable synthetic resin

substitute, does actually open the possibility of providing a completely biodegradable commercially chewing gum. (Application, page 3, lines 21-24)

According to the invention it has been found that chewing gum when formulated as mentioned above has properties with respect to storage stability, texture and release of e.g. flavor comparable to similar properties of conventional chewing gum.

In this context, it is important to note that biodegradable polymers for use in chewing gum by nature may differ considerably from conventional chewing gum polymers with respect to both physical and chemical properties. According to the invention it is mandatory to combine at least two biodegradable polymers differing with respect to both glass transition temperature and molecular weight. The at least two different biodegradable polymers in chewing gum formulations according to the present invention function together in a synergistic way in the resulting chewing gum. The claimed difference with respect to Tg has the following effects:

- The polymer with higher Tg stabilizes the polymer system at higher temperatures during storage, shipping and the like, preventing the chewing gum from losing its shape due to flow when temperatures are higher.

  Also, the sticking together of individual chewing gum pieces in a package may be prevented by the incorporation of a biodegradable polymer with a relatively high Tg in the chewing gum.

- The biodegradable polymer with lower Tg modifies the texture of the final chewing gum, preventing the polymer system from becoming too hard and resulting in an acceptable texture resembling the texture of conventional chewing gum.

VI. Grounds of Rejection to be Reviewed on Appeal

There are eight grounds of rejection to be reviewed on appeal. It should be noted that the provisional rejection of claims 1, 2, 4-6, 8, 10-13, and 15-66 in the form of an obviousness-type double patenting rejection over claims 1, 10, 11, 13-18, 24-26, 28-39, and 40-54 of co-pending Application No. 11/088,109 from the Final Office Action is acknowledged and this rejection is **not** being appealed, but will be addressed after the appeal on the merits is decided should such be necessary. The grounds of rejection to be reviewed on appeal are as follows:

A. The rejection of claims 1, 2, 4-6, 8, 10-13, 15-17, 20-43, 46, 51-53, and 63-66 under 35 U.S.C. §103(a) as obvious over Bunczek et al. (US 6,013,287).

B. The rejection of claims 18, 19, and 47-50 under 35 U.S.C. §103(a) as obvious over Bunczek et al. (US 6,013,287) in view of Grijpma et al. (US 5,672,367).

C. The rejection of claims 44 and 45 under 35 U.S.C. §103(a) as obvious over Bunczek et al. (US 6,013,287) in view of Li et al. (US 6,153,231).

D. The rejection of claims 57-62 under 35 U.S.C. §103(a) as obvious over Bunczek et al. (US 6,013,287) in view of Meyers (US 5,433,960).

E. The rejection of claims 1, 2, 4-6, 8, 10-13, 15-17, 20-43, 46, 51-53, and 63-66 under 35 U.S.C. §103(a) as obvious over Cook et al. (US 6,441,126).

F. The rejection of claims 18, 19, and 47-50 under 35 U.S.C. §103(a) as obvious over Cook et al. (US 6,441,126) in view of Grijpma et al. (US 5,672,367).

G. The rejection of claims 44 and 45 under 35 U.S.C. §103(a) as obvious over Cook et al. (US 6,441,126) in view of Li et al. (US 6,153,231).

H. The rejection of claims 57-62 under 35 U.S.C. §103(a) as obvious over Cook et al. (US 6,441,126) in view of Meyers (US 5,433,960).

VII. Argument

An invention is not patentable "if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."[1] For a claim to be rejected as obvious, the Office is required to determine the scope and content of the prior art, ascertain the differences between the claimed invention and the prior art, and resolve the level of ordinary skill in the art.[2] This analysis must be set forth explicitly.[3] When considering the prior art, the office is required to consider the prior art as a whole, and may not disregard portions of the art which show that an invention is not obvious.[4] Additionally, it is important to guard against the use of hindsight when evaluating whether a claim is obvious.[5] As a guard against hindsight, courts have identified certain scenarios in which it is improper to reject a claim as obvious. For example, a claim cannot properly be rejected as obvious when the principle of operation of the prior art would need to be modified to obtain the claimed invention.[6] Similarly, if a prior art reference teaches away from a claimed invention, then the claimed invention is not obvious over that prior art.[7] Given these standards, the Office's

[1] 35 U.S.C. § 103(a).
[2] *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007); MPEP § 2141, citing *Graham v. John Deere Co.*, 383 U.S. 1 (1966).
[3] *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007).
[4] *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983).
[5] *E.g., KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) ("A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.").
[6] *In re Ratti*, 270 F.2d 810 (CCPA 1959) (cited in MPEP 2143.01 for the proposition that "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.").
[7] *See* MPEP § 2145 citing *In re Grasselli*, 713 F.2d 731 (Fed. Cir. 1983).

rejections under 35 U.S.C. § 103(a) cannot be sustained and must be reversed for the reasons set forth below.

A. Claims 1, 2, 4-6, 8, 10-13, 15-17, 20-43, 46, 51-53, and 63-66 are not properly rejected under 35 U.S.C. §103(a) over Bunczek et al. (US 6,013,287).

The Examiner has improperly rejected claims 1, 2, 4-6, 8, 10-13, 15-17, 20-43, 46, 51-53, and 63-66 under 35 U.S.C. §103(a) as being unpatentable over Bunczek et al. (US 6,013,287). A summary of these rejections follows:

According to the rejection as set forth in paragraph no. 4, paper no. 20100217, the examiner states that Bunczek et al. disclose a chewing gum comprising at least one polyester polymer, wherein at least one of said polyester polymers is produced through the reaction of an alcohol or derivative thereof and an acid or derivative thereof.

Further the examiner contends that the teaching "at least one" is considered to meet Applicant's claims to two biodegradable polymers as "at least one" clearly indicates that there could be more than one of the polymers present. The examiner states that the chewing gum also comprises a polyester polymer functioning as an elastomer plasticizer, and that stated advantages of the invention of Bunczek et al. are a gum base that is biodegradable, and that traditional elastomers and elastomer plasticizers are replaced with other polymers, indicating that the chewing gum of the invention may be substantially or totally free of non-biodegradable polymers.

According to the rejection as set forth in paragraphs no. 12 and 13, paper no. 20100217, the examiner acknowledges that Bunczek et al. are silent as to the T_g of the different polymers.

However, the examiner contends that given that the polyester polymers as taught by Bunczek et al. are to be used in chewing gums in place of conventional elastomers, elastomer plasticizers, and resins, the same functions as claimed by Applicants, it would have been considered obvious to utilize polymers having molecular weights (Mn) and T_gs in the ranges as claimed, absent any convincing arguments or evidence to the contrary.

The examiner then concludes that the Mn and T_g of the polymers used in chewing gums are known to affect the textural/chewing properties of the gum, and that one of ordinary skill would have been able to optimize the Mn and T, of the polymers utilized in the chewing gum through no more than routine experimentation in order to achieve the desired chewing properties.

According to the rejection as set forth in paragraphs no. 56, paper no. 20100217, the examiner rejects arguments concerning "specific and unexpected benefits" from the claimed combination of polymers, which benefits are not disclosed or suggested by Bunczek et al., with the reasoning that these benefits are not part of the claim limitations. The examiner states that the claims are to a chewing gum composition comprising two different biodegradable polymers having T_g and molecular weights as claimed, and that Bunczek et al. is considered to meet these limitations and that Bunczek et al. may provide the same benefits as the present invention since Bunczek et al. speak to their product providing "improved chewing gum formulations," indicating that the products of their composition are also considered to provide benefit over the products of the prior art, and further the examiner states that Bunczek et al. also speak to an advantage of their invention in the form of a biodegradable gum base (col. 2 lines 60-61).

Finally the examiner states that Applicant has not presented convincing arguments or evidence that the polymers of Bunczek et al. do not possess the physical characteristics as

required by the instant claims; and finally that one of ordinary skill in the chewing gum art at the time the invention was made would have been able, through no more than routine experimentation, to arrive at desirable chewing gum formulations providing "benefits" over compositions of the prior art based on the teachings of Bunczek et al.

According to the rejection as set forth in paragraphs no. 57 and 58, paper no. 20100217, the examiner acknowledges that Bunczek teaches the combination of a biodegradable polymer with a synthetic elastomer, since all embodiments in Bunczek et al. comprise only one biodegradable polymer and additionally optional conventional polymers. However, with reference to a passage from the description, the examiner states that Bunczek et al. also teach the desirability of replacing *traditional elastomers and elastomer plasticizers* with the polymers of their invention to provide a biodegradable gum base. In this regard it is worth noticing that the examiner has mis-quoted the passage, since col. 2 lines 60-64 actually reads "*traditional elastomers **or** elastomer plasticizers*", again indicating that Bunczek has no purpose of obtaining a chewing gum without non-degradable polymers. However, the examiner finally concludes that while all examples of Bunczek et al. may not have replaced all synthetic elastomers and elastomer plasticizers with biodegradable elastomers and elastomer plasticizers, the idea of doing so in order to provide a biodegradable chewing gum was *clearly put forth* by Bunczek et al. and is not considered to be a new or unobvious contribution of the instant invention.

It should be noted that the term "synthetic elastomer" used by the examiner actually also covers some biodegradable elastomers. However, what is meant by the examiner (what is disclosed in Bunczek) is "synthetic conventional elastomer".

1) Claims 1, 2, 4-6, 8, 10-13, 15-17, 20-43, 46, 51-53, and 63-66

Bunczek et al. (US 6,013,287) is directed to gum bases and chewing gum formulations, as well as methods for making same, where the gum base and chewing gums include an edible end-capped polyester. (Bunczek, abstract).

It is not clear from Bunczek in what sense the addition of the edible end-capped polyester affects the chewing gum. In general it is just mentioned that the gum base and chewing gum formulation are "improved" (e.g. col. 1, lines 12-13, 47-48, and col. 2, lines 51-52). Moreover it is mentioned that traditional elastomer and elastomer plasticizers in gum bases can be replaced by other polymers, in particular the edible polyesters that are end-capped (col. 3, lines 4-9).

Bunczek discloses four different gum base examples (col. 8) of which two consist of one polyester and $CaCO_3$, and the other two consist of one polyester, $CaCO_3$ and polyvinyl acetate. Finally Bunczek concludes that the shown polyesters are not readily compatible with other base ingredients and that *it is believed* that 2-monoglyceride as the starting diol will result in more compatible polyesters (col. 9, lines 5-10).

Further down in col. 9 Bunczek states that the edible polyesters can comprise approximately 1-80% by weight of the gum base and that e.g. a synthetic elastomer should be present in an amount of 20-60% by weight (col. 9, lines 62-65).

In other words, no part of the description of Bunczek provides any hints towards using two degradable polymers in a piece of chewing gum and furthermore regarding choice of T_g and molecular weight of the polymers.

The skilled person reading Bunczek et al will learn about the use of an edible end-capped polyester in chewing gum. It is respectfully submitted by Applicant that the claimed chewing gum of the pending Claim 1 is not made obvious by the teachings of Bunczek et al.

In paragraph no. 13, paper no. 20100217, the Examiner states: "*However, given that the polyester polymers as taught by Bunczek et al. are to be used in chewing gums in place of conventional elastomers, elastomer plasticizers, and resins, the same functions as claimed by Applicants, it would have been considered obvious to utilize polymers having molecular weights (Mn) and T_gs in the ranges as claimed, absent any convincing arguments or evidence to the contrary.*"

Applicant submits that it is not completely understood what is meant by the Examiner's claim for convincing arguments or evidence. Since it is not stated in Bunczek et al., what Mn and T_g is for the prepared polymers, Applicant is unable to argue that these would have any specific values, should the skilled person try to combine two polymers. It is Applicant's view that the polymers taught by Bunczek et al. could have any value of T_g and Mn.

The skilled person is completely on his/her own when:

- picking at least two polymers;
- choosing possible T_gs; and
- choosing possible molecular weights.

The below citations from the pending application state some of the technical effects achieved by Applicant when Mn and T_g are considered according to the pending Claim 1:

When applying relatively significant differences in molecular weight between the applied biodegradable polymers, an increased possibility of tuning with respect to both texture and for instance chewing gum release has been obtained.

(PCT Application as filed, page 4, lines 27-29).

According to the invention, it has been realized that biodegradable chewing gum having a texture comparable to conventional chewing gum may be obtained, when at least two of the applied biodegradable polymers have different glass transition temperature. In other words, the applied biodegradable polymers form a hybrid polymer gumbase or chewing gum having at least two different properties with respect to the glass transitions temperature.

According to the invention, at least one of the applied biodegradable polymers may be applied for counteracting cold floating of the gumbase or the final chewing and at least one of the other may be applied for obtaining desired chewing gum properties with respect to texture.

In other words, according to the invention, it has been realized that the expected requirements with respect to the applied biodegradable polymers of a chewing gum may be significantly loosened when applying more polymers according to the invention.

Hence, according to the invention the important issue of facilitating shipping of the final product with respect to cold floating may even and unexpectedly, be dealt with by means of at least one stabilizing biodegradable polymers, e.g. a biodegradable polymer having a relatively high glass transitions temperature mixed with a further biodegradable polymer featuring another glass temperature than the stabilizing polymers. Typically, the at least one further biodegradable polymer may be chosen by e.g. an elastomer having a relatively low glass transition temperature.

Moreover, according to the invention, it has been realized that biodegradable polymers, when incorporated in a gum base or chewing gum composition reacts somewhat vulnerable compared to conventional polymers and it has moreover been realized that this vulnerability to softeners may be compensated when applying texture improving mixtures of at least two polymers having different glass transition temperature. Hence, the need for structure weakening softeners may be reduced due to the fact, that the texture is improved when compared to single Tg polymer blends of chewing gum.

(PCT Application as filed, page 5, line 29 – page 6, line 29).

In conclusion, none of the three major limitations of the pending Claim 1 are disclosed in Bunczek et al; no part of the description of Bunczek et al provides any hints towards using two

degradable polymers in a piece of chewing gum and furthermore regarding choice of T_g and molecular weight of the polymers. The Examiner's contention that "at least one" implies "two" is obviously correct in general, but Applicant respectfully submits that the differences between what is disclosed in Bunczek et al and what is claimed in the pending Claim 1 (the only independent claim) are not obvious to the person skilled in the art, and that substantial problems may arise for the skilled person when going from one to two biodegradable polymers in a chewing gum. The skilled person can get no help in the prior art what T_g and Mn are concerned, so basically he/she has an unlimited number of combinations from which to choose.

Firstly, the task of matching at least two different polymers in a chewing gum formulation is indeed different from incorporating at least one polymer in a chewing gum formulation. The wording "at least one" is, of course, grammatically implying that there may be more than one. The specific and unexpected benefits from using at least two biodegradable polymers are, however, not disclosed or suggested anywhere in Bunczek et al. These benefits, as mentioned in the pending application, e.g., on page 3, line 14 – page 4, line 4 are, among others:

- a desirable texture;
- the possibility of providing a completely biodegradable chewing gum; and
- the possibility of obtaining specific release profiles, e.g., for the release of sweeteners and flavours, different from those obtained with conventional polymers

The mentioned benefits are also highlighted in the Examples of the pending application. Example 8 confirms the advantages in texture when using two different biodegradable polymers. The release properties are elucidated in Example 12.

The results are achieved by using two different polymers having different T_g and differing in molecular weight. According to the Examiner's argument, the skilled person should realize, on the basis of the disclosure in Bunczek et al., that it is beneficial to use two biodegradable polymers, although all embodiments in Bunczek et al. comprise only one biodegradable polymer and optionally additionally conventional polymers. Bunczek et al. clearly state that the incompatibility of their polyesters with other gum base ingredients may be overcome (teach, suggest, motivate) by modifying the composition of the polymer (col. 9, lines 5-10). No teachings are given that such problems may be overcome by combining two or more biodegradable polymers with different T_g and different molecular weight. This is exactly what has been done by Applicant.

Applicant respectfully submits that the Examiner's comments on obviousness in this regard are based on a simplification of the complex problems encountered when developing chewing gum and furthermore on an overestimation of the capacity of the skilled person. Bunczek et al. give no hints as to look at T_g or molecular weight when choosing a suitable polymer for adding to their gum base. T_gs are not given at all, and the molecular weight is merely stated as a means of characterization of the obtained polymers of examples B and C in Bunczek et al.

As mentioned, Bunczek et al. in both description and examples clearly teach the combination of a biodegradable polyester with synthetic conventional elastomer, e.g., Bunczek et al. col. 9, line 62 – col. 10, line 14, whereas merely an indication (no clear teaching) can be found in claim 1 of Bunczek regarding the use of more than one polymer. This would definitely not lead the skilled person in the direction of the pending Claim 1. On the contrary, in line with

the teachings of Cook et al. and Grijpma et al., gum bases and chewing gum comprising one single biodegradable polymer are taught. One might wonder whether it is merely a coincidence that the prior art is following the same path of using only one biodegradable polymer or whether it is reflecting what the skilled person was convinced about prior to the present invention.

It is the object of the invention to provide a chewing gum having certain desired texture without dissolving the overall chewing gum structure when adjusting the texture.

It is a further object of the invention to obtain a completely biodegradable chewing gum having a texture comparable to conventional chewing gum.

Bunczek does not address the textural problems or how to obtain a completely biodegradable chewing gum with satisfactorily texture and does not teach, suggest or motivate a person skilled in the art to combine two degradable polymers with certain parameters of T_g and Mn in the chewing gum formulation. On the contrary, Bunczek teaches to mix the one end-capped polyester into any other prior art conventional chewing gum components/ingredients. A person of ordinary skill in the art would be motivated to use 2-monoglyceride in the search for more compatible polyesters to be used with other gum base ingredients (col. 9, lines 5-10).

In paragraph no. 12, paper no. 20100217 the Examiner acknowledges that Bunczek is silent as to:

(a) the Mn of their different biodegradable polymers functioning as elastomers and elastomer plasticizers in their invention.

(b) the Tg of the different polymers.

Further in paragraph no. 4, paper no. 20100217 the examiner acknowledges that Bunczek does not disclose two different biodegradable polymers, but that this is nevertheless met by

Bunczek stating "at least one" in claim 1, even though the remaining part of Bunczek has no indication at all regarding more than one biodegradable polymer.

In summary present claim 1 comprises 5 different limitations, each one narrowing the claim scope:

- Chewing gum comprising at least two different biodegradable polymers,
- said polymers have a different glass transition temperature Tg,
- at least one polymer has a Tg of at least +1°C,
- at least one polymer has a Tg of less than 0 °C and
- the difference in molecular weight between the polymers is at least 1000 g/mol Mn.

Of these five limitations, the examiner acknowledges that Bunczek is completely silent regarding the four and that the "at least two" is covered by "at least one" in claim 1, even though the remaining part of Bunczek has no indication at all regarding more than one biodegradable polymer and that it is thus very likely that the "at least one" is the work of a patent attorney more than an inventor. Reading the description of Bunczek makes it very clear, that only one polymer was considered for being added to conventional chewing gum, and that this one polymer was not even suitable for the purpose.

Consequently, indeed Bunczek seems almost irrelevant for even being considered as a prior art document in relation to the present invention. It is noted that claim 1 of the present invention upon filing simply read "Chewing gum comprising at least two different biodegradable polymers", which was and still is believed to be novel and non-obvious over prior art and indeed over Bunczek. In this relation it puzzles the applicant why Bunczek is being used as prior art by

the examiner, when only use of one polyester is disclosed for which neither glass transition temperatures nor molecular weights are being recognized or dealt with in Bunczek.

Consequently, starting from Bunczek it would not be obvious to a person of ordinary skill in the art to prepare a chewing gum according to present claim 1 comprising at least two different biodegradable polymers, wherein said at least two different biodegradable polymers have a different glass transition temperature Tg, wherein at least one of the biodegradable polymers has a glass transition of at least +1°C, wherein at least one of the at least two different biodegradable polymers has a glass transition temperature of less than 0 °C and wherein the difference in molecular weight between the at least two different biodegradable polymers is at least 1000 g/mol Mn.

Accordingly, the rejections under 35 U.S.C. 103(a), based upon Bunczek et al. have been overcome and should be withdrawn.

B. Claims 18, 19, and 47-50 are not properly rejected under 35 U.S.C. §103(a) over Bunczek et al. (US 6,013,287) in view of Grijpma et al. (US 5,672,367).

The Examiner has improperly rejected claims 18, 19, and 47-50 under 35 U.S.C. §103(a) as being unpatentable over Bunczek et al. (US 6,013,287) in view of Grijpma et al. (US 5,672,367).

Rejected claims 18, 19, and 47-50 are all ultimately dependent on claim 1; consequently, all arguments set forth in relation to claim 1 above over Bunczek apply as well. Furthermore, it should be noted that the skilled person starting from Bunczek would read that polyesters are not readily compatible with other base ingredients (col. 9, lines 5-10) unless using 2-monoglyceride

as the starting diol, and as such the skilled person would not be tempted to use the polymers of Grijpma.

Accordingly, the rejections under 35 U.S.C. 103(a), based upon Bunczek et al. in view of Grijpma et al. have been overcome and should be withdrawn.

C. Claims 44 and 45 are not properly rejected under 35 U.S.C. §103(a) over Bunczek et al. (US 6,013,287) in view of Li et al. (US 6,153,231).

The Examiner has improperly rejected claims 44 and 45 under 35 U.S.C. §103(a) as being unpatentable over Bunczek et al. (US 6,013,287) in view of Li et al. (US 6,153,231).

Rejected claims 44 and 45 are both ultimately dependent on claim 1; consequently, all arguments set forth in relation to claim 1 above over Bunczek apply as well. Furthermore, it should be noted that the skilled person looking into Li will only find a short sentence (col. 7, lines 60-61) stating that *Optional ingredients such as colors, emulsifiers and pharmaceutical agents may be added to the chewing gum.* How this should lead the skilled person to know that the agents mentioned in present claim 45 will be suitable in a chewing gum comprising at least two different biodegradable polymers is unclear.

Accordingly, the rejections under 35 U.S.C. 103(a), based upon Bunczek et al. in view of Li et al. have been overcome and should be withdrawn.

D. Claims 57-62 are not properly rejected under 35 U.S.C. §103(a) over Bunczek et al. (US 6,013,287) in view of Meyers (US 5,433,960).

The Examiner has improperly rejected claims 57-62 under 35 U.S.C. §103(a) as being unpatentable over Bunczek et al. (US 6,013,287) in view of Meyers (US 5,433,960).

Rejected claims 57-62 are all ultimately dependent on claim 1; consequently, all arguments set forth in relation to claim 1 above over Bunczek apply as well. Furthermore, it should be noted that the skilled person looking into Meyers would find a chewing gum in the form of a stick, with no degradable polymers.

It is submitted that Bunczek and Meyers are not easily combinable. For a chewing gum according to Meyers degradation of the gum base polymers will not be an issue because these in Meyers are not biodegradable. On the contrary, the polyesters of Bunczek et al. are indeed biodegradable, and the skilled person would expect degradation to be initiated during coating with aqueous coatings.

Consequently, starting from Bunczek, the applicant therefore respectfully submits, that the skilled person in the art would refrain from using a coating process according to Meyers, when the chewing gum comprises biodegradable polymeric material.

Accordingly, the rejections under 35 U.S.C. 103(a), based upon Bunczek et al. in view of Meyers et al. have been overcome and should be withdrawn.

E. Claims 1, 2, 4-6, 8, 10-13, 15-17, 20-43, 46, 51-53, and 63-66 are not properly rejected under 35 U.S.C. §103(a) over Cook et al. (US 6,441,126).

The Examiner has improperly rejected claims 1, 2, 4-6, 8, 10-13, 15-17, 20-43, 46, 51-53, and 63-66 under 35 U.S.C. §103(a) as being unpatentable over Cook et al. (US 6,441,126). A summary of these rejections follows:

According to the rejection as set forth in paragraph no. 30, paper no. 20100217, the examiner states that Cook et al. disclose a chewing gum comprising at least one polyester

polymer. Further the examiner contends that the teaching "at least one" is considered to meet Applicant's claims to two biodegradable polymers as "at least one" clearly indicates that there could be more than one of the polymers present.

The examiner states that the polyester polymer may function as elastomers and/or elastomer plasticizer, and that the polyester of Cook et al. may be used as elastomers and/or elastomer plasticizers in a gum base, comprising up to 80% by weight of the gum base.

According to the rejection as set forth in paragraphs no. 36, 37 and 61, paper no. 20100217, the examiner acknowledges that Cook et al. are silent as to the T_g of the different polymers. However, the examiner contends that given that the polyester polymers as taught by Cook et al. are to be used in chewing gums in place of conventional elastomers, elastomer plasticizers, and resins, the same functions as claimed by Applicants, it would have been considered obvious to utilize polymers having molecular weights Mn and T_gs in the ranges as claimed, absent any convincing arguments or evidence to the contrary.

The examiner then concludes that the Mn and T_g of the polymers used in chewing gums are known to affect the textural/chewing properties of the gum, and that one of ordinary skill would have been able to optimize the Mn and T_g of the polymers utilized in the chewing gum through no more than routine experimentation in order to achieve the desired chewing properties.

1) Claims 1, 2, 4-6, 8, 10-13, 15-17, 20-43, 46, 51-53, and 63-66

Cook et al. (US 6,441,126) is directed to a process for making a crosslinked branched aliphatic biodegradable polyester comprising (a) reacting at least one polyol having from three to four hydroxy groups, or ester thereof, at least one dibasic acid, or ester thereof, and at least one

long chain monocarboxylic acid, or ester thereof, at a temperature and time sufficient to form a pre-gel; and (b) crosslinking the pre-gel by extruding the pre-gel at a temperature and time sufficient to provide a crosslinked branched aliphatic biodegradable polyester. (Cook, claim 1)

In e.g. the abstract of Cook, it is mentioned that at least one crosslinked branched aliphatic biodegradable polyester may be used in a gum base.

It is not clear from Cook in what sense the addition of the branched aliphatic polyesters affects the chewing gum. In general it is just mentioned that the invention relates to their use as chewing gum base (e.g. col. 1, lines 10-12). Moreover it is mentioned that the polyesters can be used as elastomers and/or elastomeric plasticizers (col. 7, lines 59-60).

The examples of Cook (col. 11-12) hardly resemble typical gum base examples. Examples 2A and 2B are titled Reactive Extrusion to Yield Gum (Base), but the result of both examples seem to be a gum consisting of nothing else than a single de-watered polymer. The examples in Cook merely show how to make crosslinked branched aliphatic polyesters. The difference between the gum base of Example 1B and the gum of Example 2B seems to be the choice of monomers in Examples 1A and 2A, respectively. No combination of polymers is taught, suggested or motivated. Molecular weights are mentioned only in broad intervals (Cook, col. 4, lines 48-53). T_gs are not considered at all in Cook.

The only part of Cook with mentioning of further ingredients in the gum base/chewing gum seem to be in col. 7-8, where Cook states that the edible polyesters can comprise approximately 1-80% by weight of the gum base and that e.g. a synthetic elastomer should be present in an amount of 20-60% by weight (col. 7, lines 60-62 and col. 8, line 17).

In other words, no part of the description of Cook provides any hints towards using two degradable polymers in a piece of chewing gum and furthermore regarding choice of T_g and molecular weight of the polymers.

The skilled person reading Cook will learn about the reactive extrusion of pre-gelled polymers as a suitable process for preparing crosslinked branched aliphatic polyesters. It is respectfully submitted by Applicant that the claimed chewing gum of the pending Claim 1 is not made obvious by the teachings of Cook.

In paragraph no. 37 (and almost the same in paragraph no. 61), paper no. 20100217, the Examiner states: "*However, given that the polyester polymers as taught by Cook et al. are to be used in chewing gum in place of conventional elastomers and elastomer plasticizers, the same function as claimed by Applicants, it would have been considered obvious to utilize polymers having molecular weights (Mn) and T_gs in the ranges as claimed, absent any convincing arguments or evidence to the contrary.*"

Applicant submits that it is not completely understood what is meant by the Examiner's claim for convincing arguments or evidence. Since it is not stated in Cook et al., what Mn and T_g is for the prepared polymers, Applicant is unable to argue that these would have any specific values, should the skilled person try to combine two polymers. It is Applicant's view that the polymers taught by Cook et al. could have any value of T_g and Mn.

The skilled person is completely on his/her own when:

- picking at least two polymers;
- choosing possible T_gs; and
- choosing possible molecular weights.

The below citations from the pending application state some of the technical effects achieved by Applicant when Mn and T_g are considered according to the pending Claim 1:

> *When applying relatively significant differences in molecular weight between the applied biodegradable polymers, an increased possibility of tuning with respect to both texture and for instance chewing gum release has been obtained.*

(PCT Application as filed, page 4, lines 27-29).

> *According to the invention, it has been realized that biodegradable chewing gum having a texture comparable to conventional chewing gum may be obtained, when at least two of the applied biodegradable polymers have different glass transition temperature. In other words, the applied biodegradable polymers form a hybrid polymer gumbase or chewing gum having at least two different properties with respect to the glass transitions temperature.*
>
> *According to the invention, at least one of the applied biodegradable polymers may be applied for counteracting cold floating of the gumbase or the final chewing and at least one of the other may be applied for obtaining desired chewing gum properties with respect to texture.*
>
> *In other words, according to the invention, it has been realized that the expected requirements with respect to the applied biodegradable polymers of a chewing gum may be significantly loosened when applying more polymers according to the invention.*
>
> *Hence, according to the invention the important issue of facilitating shipping of the final product with respect to cold floating may even and unexpectedly, be dealt with by means of at least one stabilizing biodegradable polymers, e.g. a biodegradable polymer having a relatively high glass transitions temperature mixed with a further biodegradable polymer featuring another glass temperature than the stabilizing polymers. Typically, the at least one further biodegradable polymer may be chosen by e.g. an elastomer having a relatively low glass transition temperature.*
>
> *Moreover, according to the invention, it has been realized that biodegradable polymers, when incorporated in a gum base or chewing gum composition reacts somewhat vulnerable compared to conventional polymers and it has moreover been realized that this vulnerability to softeners may be compensated when applying texture improving mixtures of at least two polymers having different glass transition temperature. Hence, the need for structure weakening softeners may be reduced due to the fact, that the texture is improved when compared to single Tg polymer blends of chewing gum.*

(PCT Application as filed, page 5, line 29 – page 6, line 29).

In conclusion, none of the three major limitations of the pending Claim 1 are disclosed in Cook; no part of the description of Cook provides any hints towards using two degradable polymers in a piece of chewing gum and furthermore regarding choice of T_g and molecular weight of the polymers. The Examiner's contention that "at least one" implies "two" is obviously correct in general, but Applicant respectfully submits that the differences between what is disclosed in Cook and what is claimed in the pending Claim 1 (the only independent claim) are not obvious to the person skilled in the art, and that substantial problems may arise for the skilled person when going from one to two biodegradable polymers in a chewing gum. The skilled person can get no help in the prior art what T_g and Mn are concerned, so basically he/she has an unlimited number of combinations from which to choose.

Firstly, the task of matching at least two different polymers in a chewing gum formulation is indeed different from incorporating at least one polymer in a chewing gum formulation. The wording "at least one" is, of course, grammatically implying that there may be more than one. The specific and unexpected benefits from using at least two biodegradable polymers are, however, not disclosed or suggested anywhere in Cook. These benefits, as mentioned in the pending application, e.g., on page 3, line 14 – page 4, line 4 are, among others:

- a desirable texture;
- the possibility of providing a completely biodegradable chewing gum; and
- the possibility of obtaining specific release profiles, e.g., for the release of sweeteners and flavours, different from those obtained with conventional polymers

The mentioned benefits are also highlighted in the Examples of the pending application. Example 8 confirms the advantages in texture when using two different biodegradable polymers. The release properties are elucidated in Example 12.

The results are achieved by using two different polymers having different T_g and differing in molecular weight. According to the Examiner's argument, the skilled person should realize, on the basis of the disclosure in Cook, that it is beneficial to use two biodegradable polymers, although none of the embodiments in Cook disclose such combination. No teachings in Cook are given regarding advantageous textural issues when combining two or more biodegradable polymers with different T_g and different molecular weight. This is exactly what has been done by Applicant.

Applicant respectfully submits that the Examiner's comments on obviousness in this regard are based on a simplification of the complex problems encountered when developing chewing gum and furthermore on an overestimation of the capacity of the skilled person. Cook gives no hints as to look at T_g or molecular weight when choosing a suitable polymer for adding to their gum base. T_gs are not given at all, and the molecular weight is merely stated as a means of characterization of the obtained polymers of examples B and C in Cook.

As mentioned, Cook in the description teaches the combination of a biodegradable polyester with a synthetic conventional elastomer (Cook col. 8, line 14–23), in the examples teaches a gum base consisting of only one biodegradable polyester, whereas merely an indication (no clear teaching) can be found in the description of Cook regarding the use of more than one polymer ("at least one"). This would definitely not lead the skilled person in the direction of the pending Claim 1. On the contrary, in line with the teachings of Bunczek et al. and Grijpma et al.,

gum bases and chewing gum comprising one single biodegradable polymer are taught. One might wonder whether it is merely a coincidence that the prior art is following the same path of using only one biodegradable polymer or whether it is reflecting what the skilled person was convinced about prior to the present invention.

It is the object of the invention to provide a chewing gum having certain desired texture without dissolving the overall chewing gum structure when adjusting the texture.

It is a further object of the invention to obtain a completely biodegradable chewing gum having a texture comparable to conventional chewing gum.

Cook does not address the textural problems or how to obtain a completely biodegradable chewing gum with satisfactorily texture and does not teach, suggest or motivate a person skilled in the art to combine two degradable polymers with certain parameters of T_g and Mn in the chewing gum formulation. On the contrary, Cook teaches to use a crosslinked branched aliphatic biodegradable polyester as gum base or as mixed with synthetic elastomer.

In paragraph no. 36, paper no. 20100217 the Examiner acknowledges that Cook is silent as to:

(a) the Mn of their different biodegradable polymers functioning as elastomers and elastomer plasticizers in their invention.

(b) the Tg of the different polymers.

Further in paragraph no. 30, paper no. 20100217 the examiner acknowledges that Cook does not disclose two different biodegradable polymers, but that this is nevertheless met by Cook stating "at least one" in the description, even though the remaining part of Cook has no indication at all regarding more than one biodegradable polymer.

In summary present claim 1 comprises 5 different limitations, each one narrowing the claim scope:

- Chewing gum comprising at least two different biodegradable polymers,
- said polymers have a different glass transition temperature Tg,
- at least one polymer has a Tg of at least +1°C,
- at least one polymer has a Tg of less than 0 °C and
- the difference in molecular weight between the polymers is at least 1000 g/mol Mn.

Of these five limitations, the examiner acknowledges that Cook is completely silent regarding the four and that the "at least two" is covered by "at least one" in the description of Cook, even though the remaining part of Cook has no indication at all regarding more than one biodegradable polymer and that it is thus very likely that the "at least one" is the work of a patent attorney more than an inventor. Reading the description of Cook makes it very clear, that only one polymer was considered for being used alone or in combination with conventional chewing gum.

Consequently, indeed Cook seems almost irrelevant for even being considered as a prior art document in relation to the present invention. In this relation it puzzles the applicant why Cook is being used as prior art by the examiner, when only use of one polyester is disclosed for which neither glass transition temperatures nor molecular weights are being recognized or dealt with in Cook.

Consequently, starting from Cook it would not be obvious to a person of ordinary skill in the art to prepare a chewing gum according to present claim 1 comprising at least two different

biodegradable polymers, wherein said at least two different biodegradable polymers have a different glass transition temperature Tg, wherein at least one of the biodegradable polymers has a glass transition of at least +1°C, wherein at least one of the at least two different biodegradable polymers has a glass transition temperature of less than 0 °C and wherein the difference in molecular weight between the at least two different biodegradable polymers is at least 1000 g/mol Mn.

Accordingly, the rejections under 35 U.S.C. 103(a), based upon Cook have been overcome and should be withdrawn.

F. Claims 18, 19, and 47-50 are not properly rejected under 35 U.S.C. §103(a) over Cook et al. (US 6,441,126) in view of Grijpma et al. (US 5,672,367).

The Examiner has improperly rejected claims 18, 19, and 47-50 under 35 U.S.C. §103(a) as being unpatentable over Cook et al. (US 6,441,126) in view of Grijpma et al. (US 5,672,367).

Rejected claims 18, 19, and 47-50 are all ultimately dependent on claim 1; consequently, all arguments set forth in relation to claim 1 above over Cook apply as well. Furthermore, it should be noted that the skilled person starting from Cook would find no motivation in Cook for searching for other polymers than the ones mentioned in Cook.

Accordingly, the rejections under 35 U.S.C. 103(a), based upon Cook et al. in view of Grijpma et al. have been overcome and should be withdrawn.

G. Claims 44 and 45 are not properly rejected under 35 U.S.C. §103(a) over Cook et al. (US 6,441,126) in view of Li et al. (US 6,153,231).

The Examiner has improperly rejected claims 44 and 45 under 35 U.S.C. §103(a) as being unpatentable over Cook et al. (US 6,441,126) in view of Li et al. (US 6,153,231).

Rejected claims 44 and 45 are both ultimately dependent on claim 1; consequently, all arguments set forth in relation to claim 1 above over Cook apply as well. Furthermore, it should be noted that the skilled person looking into Li will only find a short sentence (col. 7, lines 60-61) stating that *Optional ingredients such as colors, emulsifiers and pharmaceutical agents may be added to the chewing gum*. How this should lead the skilled person to know that the agents mentioned in present claim 45 will be suitable in a chewing gum comprising at least two different biodegradable polymers is unclear.

Accordingly, the rejections under 35 U.S.C. 103(a), based upon Cook et al. in view of Li et al. have been overcome and should be withdrawn.

H. Claims 57-62 are not properly rejected under 35 U.S.C. §103(a) over Cook et al. (US 6,441,126) in view of Meyers (US 5,433,960).

The Examiner has improperly rejected claims 57-62 under 35 U.S.C. §103(a) as being unpatentable over Cook et al. (US 6,441,126) in view of Meyers (US 5,433,960).

Rejected claims 57-62 are all ultimately dependent on claim 1; consequently, all arguments set forth in relation to claim 1 above over Cook apply as well. Furthermore, it should be noted that the skilled person looking into Meyers would find a chewing gum in the form of a stick, with no degradable polymers.

It is submitted that Cook and Meyers are not easily combinable. For a chewing gum according to Meyers degradation of the gum base polymers will not be an issue because these in Meyers are not biodegradable. On the contrary, the polyesters of Cook et al. are indeed biodegradable, and the skilled person would expect degradation to be initiated during coating with aqueous coatings.

Consequently, starting from Cook, the applicant therefore respectfully submits, that the skilled person in the art would refrain from using a coating process according to Meyers, when the chewing gum comprises biodegradable polymeric material.

Accordingly, the rejections under 35 U.S.C. 103(a), based upon Cook et al. in view of Meyers et al. have been overcome and should be withdrawn.

In summary and in light of the foregoing, Applicants respectfully request that the pending rejections be reversed, and that the pending claims be allowed in their present form.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

1. Chewing gum comprising at least two different biodegradable polymers,

wherein said at least two different biodegradable polymers have a different glass transition temperature Tg,

wherein at least one of the biodegradable polymers has a glass transition of at least +1°C,

wherein at least one of the at least two different biodegradable polymers has a glass transition temperature of less than 0 °C and

wherein the difference in molecular weight between the at least two different biodegradable polymers is at least 1000 g/mol Mn.

2. Chewing gum according to claim 1,

wherein the at least two different polymers are hydrophilic.

3. (canceled)

4. Chewing gum according to claim 1,

wherein the difference in molecular weight between the at least two different polymers is at least 50000 g/mol Mn.

5. Chewing gum according to claim 1,

wherein at least one of said at least two different biodegradable polymers comprises a biodegradable elastomer and

at least one of said at least two different biodegradable polymers comprises a biodegradable plasticizer, said biodegradable plasticizer comprising at least one biodegradable polymer.

6. Chewing gum according to claim 5,

wherein the molecular weight of said biodegradable plasticizer is in the range of 500 - 19,000 g/mol Mn.

7. (canceled)

8. Chewing gum according to claim 5, wherein said at least two different biodegradable polymers have different glass transition temperatures Tg.

9. (canceled)

10. Chewing gum according to claim 1,

wherein at least one of the biodegradable polymers, has a glass transition of at least +10°C.

11. Chewing gum according to claim 1,

wherein at least one of the biodegradable polymers, has a glass transition of at least +20°C.

12. Chewing gum according to claim 1,

wherein at least one of the biodegradable polymers comprises a biodegradable elastomer.

13. Chewing gum according to claim 12,

wherein the molecular weight of said biodegradable elastomer is in the range of 10000 - 1000000 g/mol Mn.

14. (canceled).

15. Chewing gum according to claim 1,

wherein at least one of the at least two different biodegradable polymers has a glass transition temperature of less than -30°C.

16. Chewing gum according to claim 1,

wherein the resulting chewing gum has at least two different glass transition temperatures Tg.

17. Chewing gum according to claim 1,

wherein the chewing gum comprises at least one biodegradable elastomer having a glass transition temperature Tg below 0°C and at least one biodegradable plasticizer having a glass transition temperature Tg exceeding 0°C.

18. Chewing gum according to claim 17,

wherein the at least one plasticizer comprises a biodegradable polymer obtained by polymerization of one or more cyclic esters.

19. Chewing gum according to claim 17,

wherein the at least one elastomer comprises a biodegradable polymer obtained by polymerization of one or more cyclic esters.

20. Chewing gum according to claim 17,

wherein the at least one elastomer comprises edible polyesters.

21. Chewing gum according to claim 17,

wherein the at least one elastomer comprises edible polyesters or polyhydroxyalkanoates.

22. Chewing gum according to claim 1,

wherein said chewing gum comprises at least one biodegradable elastomer in the amount of about 0.5 to about 70% wt of the chewing gum, at least one biodegradable plasticizer in the

amount of about 0.5 to about 70% wt of the chewing gum and at least one chewing gum ingredient chosen from the group consisting of softeners, sweeteners, flavoring agents, active ingredients and fillers in the amount of about 2 to about 80% wt of the chewing gum.

23. Chewing gum according to claim 1,

wherein the at least one biodegradable polymer comprises at least 25% of the chewing gum polymers.

24. Chewing gum according to claim 1,

wherein all the biodegradable polymers comprised in the chewing gum comprise at least 25% of the chewing gum polymers.

25. Chewing gum according to claim 1,

wherein all the biodegradable polymers comprised in the chewing gum comprise at least 80% of the chewing gum polymers.

26. Chewing gum according to claim 1,

wherein the chewing gum is substantially free of non-biodegradable polymers.

27. Chewing gum according to claim 1,

wherein the chewing gum is free of non-biodegradable polymers.

28. Chewing gum according to claim 22,

wherein said chewing gum ingredients comprise flavoring agents.

29. Chewing gum according to claim 28,

wherein said flavoring agents comprise natural and synthetic flavorings in the form of natural vegetable components, essential oils, essences, extracts, powders, including acids or other substances capable of affecting the taste profile.

30. Chewing gum according to claim 28,

wherein said chewing gum comprises flavoring agents in the amount of 0.01 to about 30 wt %, said percentage being based on the total weight of the chewing gum.

31. Chewing gum according to claim 28,

wherein said chewing gum comprises flavoring agents in the amount of 0.2 to about 4 wt %, said percentage being based on the total weight of the chewing gum.

32. Chewing gum according to claim 28,

wherein said flavoring agent comprises water soluble ingredients.

33. Chewing gum according to claim 32,

wherein said water soluble flavoring agent comprises acids.

34. Chewing gum according to claim 28,

wherein said flavoring agent comprises water insoluble ingredients.

35. Chewing gum according to claim 22,

wherein said chewing gum ingredients comprise sweeteners.

36. Chewing gum according to claim 35,

wherein said sweetener comprises bulk sweeteners.

37. Chewing gum according to claim 36,

wherein the chewing gum comprises bulk sweeteners in the amount of about 5 to about 95% by weight of the chewing gum.

38. Chewing gum according to claim 35,

wherein said sweetener comprises high intensity sweeteners.

39. Chewing gum according to claim 38,

wherein the high intensity sweeteners comprise sucralose, aspartame, salts of acesulfame, alitame, saccharin and its salts, cyclamic acid and its salts, glycyrrhizin, dihydrochalcones, thaumatin, monellin, stevioside, alone or in combination.

40. Chewing gum according to claim 38,

wherein the chewing gum comprises high intensity sweeteners in the amount of about 0 to about 1% by weight of the chewing gum.

41. Chewing gum according to claim 1,

wherein the chewing gum comprises at least one softener.

42. Chewing gum according to claim 41,

wherein the at least one softener comprises tallow, hydrogenated tallow, hydrogenated and partially hydrogenated vegetable oils, cocoa butter, glycerol monostearate, glycerol triacetate, lecithin, mono-, di- and triglycerides, acetylated monoglycerides, fatty acids, stearic acid, palmitic acid, oleic acid, linoleic acid, waxes, polyglycol esters, or mixtures thereof.

43. Chewing gum according to claim 41,

wherein the chewing gum comprises softeners in the amount of about 0 to about 18% by weight of the chewing gum.

44. Chewing gum according to claim 22,

wherein said chewing gum ingredients comprise active ingredients.

45. Chewing gum according to claim 44, said active ingredients being selected from the group consisting of: Acetaminophen, Acetylsalicylic acid, Buprenorphine, Bromhexin, Celcoxib,

Codeine, Diphenhydramin, Diclofenac, Etoricoxib, Ibuprofen, Indometacin, Ketoprofen, Lumiracoxib, Morphine, Naproxen, Oxycodon, Parecoxib, Piroxicam, Rofecoxib, Tenoxicam, Tramadol, Valdecoxib, Calciumcarbonat, Magaldrate, Disulfiram, Bupropion, Nicotine, Azithromycin, Clarithromycin, Clotrimazole, Erythromycin, Tetracycline, Granisetron, Ondansetron, Prometazin, Tropisetron, Brompheniramine, Ceterizin, leco-Ceterizin, Chlorcyclizine, Chlorpheniramin, Chlorpheniramin, Difenhydramine, Doxylamine, Fenofenadin, Guaifenesin, Loratidin, des-Loratidin, Phenyltoloxamine, Promethazin, Pyridamine, Terfenadin, Troxerutin, Methyldopa, Methylphenidate, Benzalcon. Chloride, Benzeth. Chloride, Cetylpyrid. Chloride, Chlorhexidine, Ecabet-sodium, Haloperidol, Allopurinol, Colchinine, Theophylline, Propanolol, Prednisolone, Prednisone, Fluoride, Urea, Miconazole, Actot, Glibenclamide, Glipizide, Metformin, Miglitol, Repaglinide, Rosiglitazone, Apomorfin, Cialis, Sildenafil, Vardenafil, Diphenoxylate, Simethicone, Cimetidine, Famotidine, Ranitidine, Ratinidine, cetrizin, Loratadine, Aspirin, Benzocaine, Dextrometorphan, Ephedrine, Phenylpropanolamine, Pseudoephedrine, Cisapride, Domperidone, Metoclopramide, Acyclovir, Dioctylsulfosucc., Phenolphtalein, Almotriptan, Eletriptan, Ergotamine, Migea, Naratriptan, Rizatriptan, Sumatriptan, Zolmitriptan, Aluminium salts, Calcium salts, Ferro salts, Silver salts, Zinc-salte, Amphotericin B, Chlorhexidine, Miconazole, Triamcinolonacetonid, Melatonine, Phenobarbitol, Caffeine, Benzodiazepiner, Hydroxyzine, Meprobamate, Phenothiazine, Buclizine, Brometazine, Cinnarizine, Cyclizine, Difenhydramine, Dimenhydrinate, Buflomedil, Amphetamine, Caffeine, Ephedrine, Orlistat, Phenylephedrine, Phenylpropanolamin, Pseudoephedrine, Sibutramin, Ketoconazole, Nitroglycerin, Nystatin, Progesterone, Testosterone, Vitamin B12, Vitamin C, Vitamin A, Vitamin D, Vitamin E, Pilocarpin, Aluminiumaminoacetat, Cimetidine,

Esomeprazole, Famotidine, Lansoprazole, Magnesiumoxide, Nizatide and/or Ratinidine or derivates and mixtures thereof.

46. Chewing gum according to claim 22,

wherein the chewing gum is substantially free of non-biodegradable polymers.

47. Chewing gum according to claim 1,

wherein one of the at least two biodegradable polymers is a polymer obtained by polymerization of one or more cyclic esters wherein the cyclic esters are selected from the group consisting of glycolides, lactides, lactones, cyclic carbonates and mixtures thereof.

48. Chewing gum according to claim 47,

wherein said lactones are chosen from the group consisting of ε-caprolactone, δ-valerolactone, γ-butyrolactone, β-propiolactone, and mixtures thereof; wherein the lactone is optionally substituted with one or more alkyl or aryl substituents at any non-carbonyl carbon atoms along the ring, including compounds in which two substituents are contained on the same carbon atom.

49. Chewing gum according to claim 47,

wherein the carbonate monomer is selected from the group consisting of trimethylene carbonate, 5-alkyl-1,3-dioxan-2-one, 5,5-dialkyl-1,3-dioxan-2-one, or 5-alkyl-5-alkyloxycarbonyl-1,3-dioxan-2-one, ethylene carbonate, 3-ethyl-3-hydroxymethyl, propylene

carbonate, trimethylolpropane monocarbonate, 4, 6dimethyl-1, 3-propylene carbonate, 2, 2-dimethyl trimethylene carbonate, 1, 3-dioxepan-2-one and mixtures thereof.

50. Chewing gum according to claim 47,

wherein cyclic ester polymers and their copolymers resulting from the polymerization of cyclic ester monomers are selected from the group consisting of poly (L-lactide) ; poly (D-lactide) ; poly (D, L-lactide) ; poly (mesolactide) ; poly (glycolide) ; poly (trimethylenecarbonate) ; poly (epsilon-caprolactone) ; poly (L lactide-co-D, L-lactide) ; poly (L-lactide-co-meso-lactide) ; poly (L-lactide co-glycolide) ; poly (L-lactide-co-trimethylenecarbonate) ; poly (L-lactide co-epsilon-caprolactone) ; poly (D, L-lactide-co-meso-lactide) ; poly (D, L lactide-co-glycolide) ; poly (D, L-lactide-co-trimethylenecarbonate) ; poly (D, L-lactide-co-epsilon-caprolactone) ; poly (meso-lactide-co glycolide) ; poly (meso-lactide-co-trimethylenecarbonate) ; poly (meso-lactide-co-epsilon-caprolactone) ; poly (glycolide-cotrimethylenecarbonate) and poly (glycolide-co-epsilon-caprolactone).

51. Chewing gum according to claim 1,

wherein the chewing gum comprises filler.

52. Chewing gum according to claim 51,

wherein the chewing gum comprises filler in an amount of about 0 to about 50% by weight of the chewing gum.

53. Chewing gum according to claim 1,

wherein the chewing gum comprises at least one coloring agent.

54. Chewing gum according to claim 1,

wherein the chewing gum is coated with an outer coating.

55. Chewing gum according to claim 54,

wherein the outer coating is a hard coating.

56. Chewing gum according to claim 55,

wherein the hard coating is a coating selected from the group consisting of a sugar coating, a sugarless coating, and a combination thereof.

57. Chewing gum according to claim 55,

wherein the hard coating comprises 50 to 100% by weight of a polyol selected from the group consisting of sorbitol, maltitol, mannitol, xylitol, erythritol, lactitol and isomalt.

58. Chewing gum according to claim 54,

wherein the outer coating is an edible film comprising at least one component selected from the group consisting of an edible film-forming agent and a wax.

59. Chewing gum according to claim 58,

wherein the film-forming agent is selected from the group consisting of a cellulose derivative, a modified starch, a dextrin, gelatine, shellac, gum arabic, zein, a vegetable gum, a synthetic polymer and any combination thereof.

60. Chewing gum according to claim 54,

wherein the outer coating comprises at least one additive component selected from the group consisting of a binding agent, a moisture absorbing component, a film forming agent, a dispersing agent, an antisticking component, a bulking agent, a flavoring agent, a coloring agent, a pharmaceutically or cosmetically active component, a lipid component, a wax component, a sugar, an acid and an agent capable of accelerating the after-chewing degradation of the degradable polymer.

61. Chewing gum according to claim 54,

wherein the outer coating is a soft coating.

62. Chewing gum according to claim 61,

wherein the soft coating comprises a sugar free coating agent.

63. Chewing gum according to claim 1,

wherein said chewing gum comprises conventional chewing gum polymers or resins.

64. Chewing gum according to claim 1,

wherein the at least one biodegradable polymer comprises at least 5% of the chewing gum polymers.

65. Chewing gum according to claim 1,

wherein all the biodegradable polymers comprised in the chewing gum comprise at least 25% of the chewing gum polymers.

66. Chewing gum according to claim 1,

wherein all the biodegradable polymers comprised in the chewing gum comprise at least 80% of the chewing gum polymers.

67. (canceled).

IX. EVIDENCE APPENDIX

None presented.

X. RELATED PROCEEDINGS APPENDIX

No decisions by either the Board or any court have been rendered in proceeding identified in section II of this paper.